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IN THIS ISSUE...

Local Technical Assistance Program

STUDS, TRUCKS, & LOW TEMPERATURES

by Tony Barter, P.E.
Statewide Materials Engineer

Studs, trucks, and low temperatures were the subject matters presented by the Alaska Department of Transportation and Public Facilities (DOT&PF) Headquarters Materials section at the Fifth International Symposium on Cold Regions Development (ISCORD).

ISCORD '97, May 4-7, was an international exchange of information promoting economical and technical progress in cold regions of the world. In all, approximately 150 presentations, four plenary sessions, and over 30 poster displays were presented.

Tony Barter, State Materials Engineer, presented a paper on "Options for Reducing Stud-Induced Pavement Wear," which presented information from a fact finding trip to Scandinavia in 1995, because they analyzed this problem for twenty years and invested approximately $150 million in re-

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Performance Contracts in the Matanuska-Susitna Borough

by Jim Swing, Public Works Director, T2 Board

The Matanuska-Susitna (Mat-Su) Borough maintains over 1,000 miles of roads and streets within the Borough, which encompasses an area slightly larger than the state of West Virginia. Since it is a Second Class Borough with limited powers, the maintenance of roads is allowed using a service area concept. The Borough has 17 road service areas, which were formed by a vote of the individuals residing in the particular service area.

When road service areas were first formed, a decision was made to contract out all road maintenance and not perform the work with Borough employees. That policy is still in effect. The Borough employs four superintendents, who supervise the contractors and assure compliance with contract provisions, and one road technician, who installs the signs, sweeps paved roads, and supervises a staff of summer temporary employees who repair potholes and perform crack sealing on paved roads. Five contractors who have been the successful bidders on recent maintenance contract

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Correction

The Fourth Annual Bridge Building Competition article in the Spring 1997 issue was incorrectly attributed to Paul Knysh,P.E.. The correct author is Catherine Hardwood, E.I.T., Assistant Bridge Inventory Engineer.

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search. The Alaska DOT&PF reviewed the current studies and is in the process of implementing the results of this work effort. Three significant findings of the Scandinavian research included: 1) mandate the use of lightweight studs to reduce pavement wear by 50%, 2) use Stone Mastic Asphalt (SMA), and 3) incorporate harder, more durable aggregates in the SMA mix. SMA can reduce pavement wear an additional 30%. Hopefully, by adopting these concepts, the service life of the pavements will be greater than the wear rates causing premature repairs. This presentation was one of eleven others reflecting on pavement wear and studded tires, from Finland, Norway, Japan, Oregon, and Sweden.

Eric Johnson, Engineer of Tests, presented one of eight papers on pavement performance in cold regions. "Parks Highway Load Restriction Study" reviewed the principles of applying seasonal load restrictions. The study investigated the costs and benefits of applying seasonal restrictions. DOT&PF monitored the effects of 100% axle loads on the Parks Highway during the spring of 1996. Study conclusions resulted in revising the long standing policy of seasonal weight restrictions from 75% to 85% of legal axle loads. In addition, speed reduction zones were identified along the Parks Highway for those sections with reduced strength. The conclusion of this study will be useful in adopting new policies statewide.

Dr. Lutfi Raad, Professor of Civil Engineering and Director of the University of Alaska Fairbanks Transportation Research Center, presented his findings on "An Overview of Low Temperature Cracking of Asphalt and Polymer Modified Asphalt Concrete Pavements in Alaska." Several modified asphalt pavements have been placed in Alaska over the last 15 years to reduce low temperature cracking caused by extreme temperatures that range from -50° Celsius to 40° Celsius. This paper provided the overview of research conducted to assess the improvements modifiers provided for Alaskan pavements. The results of the study indicated that the use of polymer modifiers was beneficial in reducing low temperature cracking; crack density was reduced on average by 30% to 40%.•

Bureau of Indian Affairs 638 Partnership

by Marie Messing, Area Road Engineer, Bureau of Indian Affairs, T2 Board

Prior to 1993, the Bureau of Indian Affairs Juneau Area Office (BIA) was constructing road projects by either BIA Force Account or Buy Indian commercial contract. Both methods caused heartache due to the lack of local hiring opportunities. Commercial contractors had large core crews and the BIA had restrictive personnel hiring regulations. In addition, some tribes were not equipped to handle certain aspects of a large-scale road construction project.

With the advent of the latest Public Law 93-638 amendments, and in response to these problems, the BIA began what is now known as a 638 Partnership. Under a 638 Partnership, the tribe contracts for portions of the project which it has determined it can perform. The parts of the contract that the tribe does not perform, the BIA performs in partnership with the tribe.

Once construction is ready to begin, the BIA and the tribe begin PL 93-638 contract negotiations. The tribe selects the portions of the work which it is able to perform, such as providing the labor force, purchasing materials, and utilization of local trucks or heavy equipment. The BIA provides any remaining equipment, labor, or materials. If any BIA equipment is used, the BIA will provide a heavy-duty mechanic to maintain the equipment and provide technical assistance. The BIA will also provide the project superintendent and a lead equipment operator who will provide technical assistance. In the 638 Partnership, the BIA assumes the majority of responsibility for the completion of the project.

Two road construction projects have been completed with the 638 Partnership in Elim and Lower Kalskag. Presently, a 638 Partnership road project is being completed in Kaltag. One of the main advantages of the 638 Partnership contract has been that the tribe and tribal employees are involved as much as possible. On all three projects the tribe has been able to hire all local tribal members in all positions of the construction crew. In addition, the tribe has gained knowledge and experience by performing the contract administration for a major road construction project.

The 638 Partnership has proven to be a win-win arrangement for both the BIA and the participating tribes. The BIA completes a well-constructed road project and the tribes have the satisfaction of being directly involved in the construction. In addition, the tribal government has been strengthened and any financial profits remain in the village. The more tribes learn about the successes of this option, the more responsive the BIA can be to local concerns. Success breeds success. •

A Reality Check for Superpave Binders

Here's the truth, from the supplier's perspective. Part II of II

by April Swanson

The Approved Supplier Certification(ASC) program went through reviews, comments, and voting before being brought to the American Association of State Highway and Transportation Officials (AASHTO). Now it fits in as AASHTO standard, PP26-96. The standard was to be balloted in November 1996, so results should be seen pretty soon.

Here are some of the main features of the AASHTO PP26-96 plan:

- The manufacturer or supplier can supply asphalt under the ASC program. If he doesn't want to do that he still has the option of pretesting the asphalt.
- The HMA producer has to follow the supplier's recommendations in the quality control(QC) plan. In many cases, this is something simple. For more exotic grades, like a polymer modified grade, there may be certain other steps you have to do, such as agitate your material and not start too long. The HMA producer in certain circumstances may be a manufacturer himself. If he's actually producing a new PG grade, he will have to be certified under the ASC program for pretesting.
- The agency checks and makes sure the asphalt is delivered as requested. The agency takes field samples and can take split samples with the supplier or HMA producer if he chooses.

Initial certification is kind of difficult under certain circumstances. Sometimes we have to certify an asphalt we are not producing commercially. For that purpose, many states are allowing lab blends of asphalt to be used for at least some of the samples for initial certification. It is important always to check a commercial batch so you can produce it like you thought you had in the lab.

VMA(voids in the mineral aggregate) asphalt application at the Parks Highway project, Fairbanks, Alaska.

Another interesting concept is beginning: Some states are accepting supplier certifications from neighboring states. This practice eliminates some of the redundancy of testing and certifying and is a way to save lab work.

More on the role of the HMA producer

The main thing producers must do is follow the supplier's plan for handling the asphalt, including such issues as in-line blending for a polymer concentrate, or the use of solid additives. Whether or not the state accepts this type of material and how it is handled is really at the discretion of the agency.

The AASHTO provisional standard is very flexible to accommodate lots of different situations. Under certain circumstances, the HMA contractor will have to be certified himself if he really is manufacturing PG binder.

Agency acceptance samples

When the agency takes its acceptance samples, the producer or supplier may request a split sample. If that is done, a third referee sample will also be taken, which is a very good idea.

An issue that may come up here, because of the potential for a lot of split samples, is the HMA producer may have to retain and store samples. Some producers are probably used to it. It's good insurance.

In PP26, there are also steps outlined to show the material is out of tolerance. It doesn't really explain what "out of tolerance" is, but the concept basically involves notifying the agencies responsible for the samples, reviewing testing and sampling procedures, and working together to decide on appropriate action. If the agency sample shows failure to comply with the spec, the action that should be taken according to PP26 is clear:

investigate the cause, correct the action, and if there is a serious departure in properties of material from the spec, the agency has a right to delay project work. It's pretty similar to what the industry has today.

Test reproducibility and what is off spec

The industry may not have as good a testing basis as is needed right now to determine what is off spec. The North Central Asphalt User-Producer Group(NCUPG) has done a round robin of binder tests in four different asphalt samples.

On one of the tests, the low temperature M value, the test variability came back, and it was not as good as we might hope, but it works. The variability was not distributed in a random manner. All of the supplier results hover around the mean, as do the Asphalt Institute and FHWA results.

But the state results are lower, which means more failed samples. So test variability exists, but the test variability was not random, and would lead to a lot of penalties.

That situation causes panic among suppliers, because here they're supplying asphalt they think has plenty of margin to pass the spec, but states are getting lower results and want to fail suppliers. It's tempting to try to pin this on a single, simple cause.

One of the things looked at was the manufacture of the bending beam rheometer test results. A study found there is a bias in the results between two rheometers tested, but not enough to account for the difference in the state results and the supplier results.

For all the Superpave binder tests and a lot of the aggregate and mix tests, there are probably a half dozen little things that contribute to test variability and are going to have to be hammered out in a painful manner to establish reproducibility.

Where are we on test precision?

Results from the NCUPG on variability showed a coefficient of variation for the viscosity test at 3.6 percent, something we're used to. But, the original DSR coefficient of variation is 10.7 to 15 percent, many times the variation we're used to.

In viscosity testing, you really can't consider two results different unless their difference is 10 percent of the mean. The bottom line is, the precision is not to the point where it should be. The hope is people will not take too hard a line on penalties, that things will be left open for discussion, and everyone will work very hard to make these tests more precise.

Recommendations?

There has been a lot of success with smaller groups of suppliers or contractors talking with each other about where the problems are, and then talking with the agency about where problems may exist. Unless industry speaks up, people aren't going to find out what kinds of changes are needed.

The Asphalt Institute is preparing a detailed instrument specific procedure for these binder tests, which will hopefully pin down some of the sources of the variation. In the meantime, it can't be stressed enough how valuable it is to do testing in somebody else's lab, or invite somebody else over to your lab to do testing. Perform not only binder tests, but also aggregate and mixture tests.

It's amazing how much can be learned by having two people familiar with the process compare how they do things. Another valuable practice is exchanging samples with other labs and comparing results. If they're very different, try to figure out why these differences exist. An information exchange will be set up on testing hints and problems. By exchanging information, testing can be improved.

How are the differences handled?

Superpave binders are being implemented before things are in a perfect situation. One way to handle it is to have test tolerances written into specs in order to keep construction going. The last thing anyone needs is to be shut down with severe penalties.

Finally, suppliers are working through AASHTO and ASTM to approve test precision. AASHTO and ASTM are the industry, and everyone must work hard to improve tests. Superpave is on a fast track and it will offer many wonderful benefits. Test precision will improve with time, experience and work, but until then, the industry must maintain an open dialogue to ensure the success of Superpave.

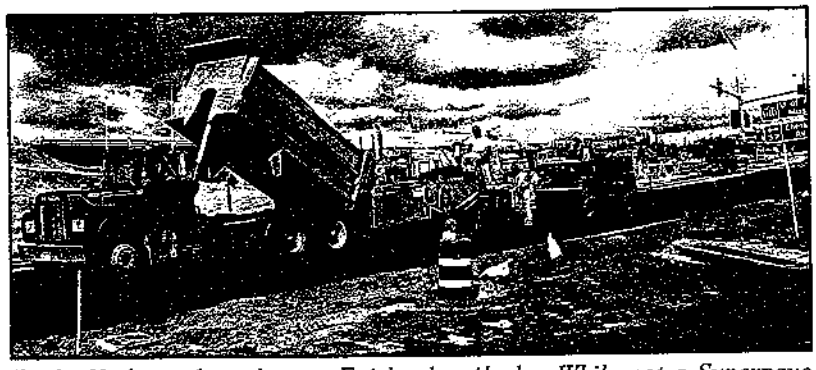
Reprinted with permission from "The Asphalt Contractor," February 1997. Part one of two appeared in the Spring 1997 issue. •

Roller at Parks Highway project, Fairbanks, Alaska.

ALASKA'S PLAN FOR SUPERPAVE

by *Tony Barter, P.E.*
Statewide Materials Engineer

Superpave (Superior Performing Asphalt Pavements) is a hot mix asphalt design system that uses performance based testing to predict performance of asphalt pavements. Superpave, a product of the Strategic Highway Research Program (SHRP) asphalt research, allows for design of asphalt pavements that will provide better performance against pavement rutting and thermal cracking for each specific project. SHRP developed new performance based asphalt tests to control rutting, low temperature cracking and fatigue cracking of mixes. The new asphalt binder specifications resulted in five new test procedures to classify asphalt binders: the bending beam rheometer, asphalt aging procedures, the rotational viscometer, the dynamic shear rheometer, and the direct tension test. Fatigue problems are avoided by proper structural section thickness design. The major influence on whether a mix will rut or not is the blend of the aggregate matrix. The asphalt grade contributes 10% to 30% in rutting characteristics. Whereas the asphalt grade is said to have a 90% effect on the thermal cracking properties of asphalt.



Parks Highway Interchange, Fairbanks, Alaska. While not a Superpave project,it is representative of the paving process.

User/producer groups are organized across the country to provide systematic evaluation and validation of SHRP Superpave asphalt mix design specifications. The states of Alaska, Arizona, California, Oregon, Nevada, Washington, and Western Canada participate in the Pacific Coast user/producer group. Oil suppliers, oil additive companies, FHWA, counties, equipment supply companies, and universities complete the membership. Within the organization there are two working committees: Paving Asphalt Committee and Paving Mix Committee. These two groups research, evaluate, and report on lab equipment, test procedures, and field performance of Superpave mixtures.

Scott Gartin, Pavement Management Engineer, represents Alaska DOT&PF at the working committees. Dave Sterley, Southeast Materials Engineer, laid the early groundwork for Alaska's participation. Although Sterley is not currently assigned to the group, he is actively consulted as an alternate for Garter. Most recently, Richard Lindsey, of MAPCO Alaska Petroleum, Inc. and Robert Camilli of Emulsion Products of Alaska, Inc. have joined this organization.

Alaska has five projects planned for the 1997 construction season which require Superpave binder specifications. One of these projects will also specify a Level 1 mix design. The use of Superpave is considered on a project to project basis in order to build confidence in its application. We expect to be fully implemented by the year 2000.

Transitioning into the SHRP asphalt program requires a viable Quality Control/Quality Assurance (QC/QA) program. To be in compliance with FHWA 23 CFR 637, all technicians doing acceptance or assurance testing must be qualified by June 29, 2000. This regulation also requires that all laboratories doing acceptance or assurance testing be AASHTO accredited by the same date. Boyd Brownfield, Deputy Commissioner, has stated the goal for ADOT&PF is to have the training program in place by the summer of 1998. Eric Johnson, Engineer of Tests, is providing the coordination for developing this program.

Lutfi Raad, Professor of Civil Engineering and Director at the University of Alaska Fairbanks Transportation Research Center, recently completed a research project titled "An Overview of Low Temperature Cracking of Asphalt and Polymer Modified Asphalt Concrete Pavements in Alaska." Low temperature cracking is a major distress mode in Alaskan pavements due to the extreme temperature conditions ranging from -50 degrees Celsius in winter to 40 degrees Celsius in summer. To reduce low temperature cracking, several modified asphalt pavements have been placed in Alaska over the last 15 years. These additives included polymers such as Styrene-Butadiene Styrene (SBS) synthetic rubber and Styrene-Butadiene Latex Rubber (SBR), in addition to crumb tire rubber using both the wet and dry

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process. Dr. Raad's research project provided an overview to asses the benefits of adding modifiers for Alaskan pavements. Study results indicate that the use of polymer modifiers is generally beneficial. The crack density is reduced on the average by 30 to 40 percent. In regards to Superpave binders, we find that by modifying the asphalt for specific projects, the low temperature performance can be improved. The final decision to incorporate modifiers must be based on life cycle cost, as a variety of environmental factors contribute to the service life of a pavement.

Alaska is actively involved in adopting the Superpave system. Our involvement in the user/producer group allows the ADOT&PF to be current in the validation process for asphalt binders and the mix design system. All three regions are performing correlation tests with Superpave. The Headquarters Materials office continues to provide coordination for full implementation to Superpave. For additional information about this transition, contact one of the regional materials sections or Headquarters Materials at (907) 269-6230. •

Update on Superpave Short Term Aging Protocol

The current short term aging protocol in Superpave requires that after mixing, loose mixture samples be aged in a forced draft oven for four hours at 135° C. After short term aging, the mixture sample is compacted in the Superpave gyratory compactor. This aging protocol was developed by SHRP researchers to create a compacted specimen with mechanical properties that simulate an asphalt mixture immediately after construction. If mechanical properties are to be measured on a compacted specimen, then this procedure is very effective at simulating such a condition. However some engineers have asked, "If I am only interested in the volumetric properties of an asphalt blend, can I get by with less oven aging?" Recently the short term aging protocol in Superpave and its role in Superpave mix design and analysis have been the subject of research conducted by the Federal Highway Administration (FHWA) Superpave Mixtures Expert Task Group (ETG).

The research was prosecuted as a round robin experiment by ETG members, which included agency and industry laboratories. The data was analyzed by FHWA. Experimental results showed that, except for highly absorptive aggregate, there is little difference in volumetric properties between mixtures aged between two and four hours. The study concluded that two hours of short term aging is sufficient in Superpave mix design where volumetric properties are of primary interest. In Superpave mix design, no mixture mechanical properties are determined.

The FHWA Superpave Mixtures ETG suggested the following changes to AASHTO PP2, Short and Long Term Aging of Hot Mix Asphalt: the short term aging period of Superpave mix design specimens, upon which only volumetric properties are measured, be set at two hours in a forced draft oven at 135° C; when dealing with absorptive aggregate (defined as aggregate with water absorption greater than 2.5 percent), four hours of oven aging should be used. The two hour aging period is not applicable to preparation of specimens to be used for testing in the Superpave shear tester or indirect tensile tester. In other words, Superpave mix analysis should be conducted using specimens prepared by the original short term aging period of four hours at 135° C.

The issue of short term aging of plant produced mixtures also was raised by the FHWA Superpave Mixtures ETG. Short term aging in AASHTO PP2 is currently only applicable to laboratory produced mixtures. No short term aging is proscribed for mixture produced at a hot mix plant. If mixtures in the field need to be reheated to attain the proper compaction temperature, then the heating time should be limited only for the time necessary to bring the mixture to the proper compaction temperature. The consensus of the ETG was that the issue of field aging of asphalt mixes needed to be addressed, possibly by additional research.

Reprinted with permission from The South Central Superpave Center, University of Texas at Austin, website at http://www.utexas.edu/research/superpave/research/aging.html. •

For More Information

For back issues of our newsletter and inserts, or to get on our mailing list, write: Alaska Transportation Technology Transfer Program, Department of Transportation and Public Facilities, 2301 Peger Road, M/S 2550, Fairbanks, Alaska 99709-5399. For more information, you can also call (907) 451-5320, or visit our Website at: www.dot.state.ak.us/external/state_wide/t2/t2_imndex.html.

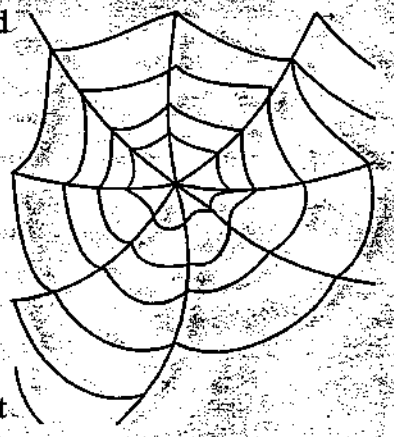
Roundup of Computer Facts, Tips, And Tricks

Here's fast-reading computer news for home and the office:

Web Page Alternative

If your company does not have a Web page but would like to take advantage of online exposure, try online classified ads. Need some inducement? Many of them are free!

There are several places online where you can post a free classified ad. Each site varies as to type of ad, length, and duration of posting, but the overall procedure is similar.



Where can you find them? As so often happens on the Net, someone has helpfully collected the appropriate listings into a directory. Call up http://www.magpage.com/~rispoli/free.html and you'll have reached Classified Ad Sites That Are FREE to Post.

What's It Mean?

And speaking of Web addresses, what does HTML stand for? The letters mean HyperText Markup Language. This is a computer language that allows you to read and write documents on the Web regardless of your own computer's hardware or software. Programs are available that will automatically "translate" word processing into HTML for you.

Think Before You Type

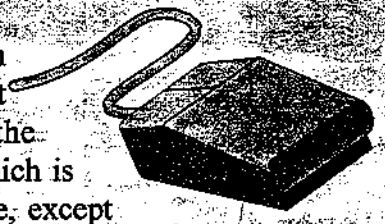
Whether you're going to send E-mail within the company or around the world, think twice before you hit the send button—for several reasons.

• *E-mail is an electronic postcard.* Even if E-mail is addressed to an individual, it can be accessed and read by others. Temper your words before making them "public." And remember, once E-mail is sent, it's sent. There's no rushing down to the post office to retrieve your letter.

• *Double-check the address.* It's amazing how much snail mail eventually gets through, despite mistakes in street or city addresses or ZIP codes. E-mail, however, is not so forgiving: There's no postal worker present who'll try to decipher the address for you. A single wrong keystroke makes your message undeliverable.

• And speaking of addresses, leave time for address changes. Few online services "forward" E-mail when you change your online address, so allow about a month's overlap if you're changing providers. Continue to pick up mail at the old address for that month while notifying each sender about your new address.

Are You a Lefty?



The left mouse button is the "primary" or most often used button on the mouse in Windows, which is convenient for everyone, except you if you're left-handed.

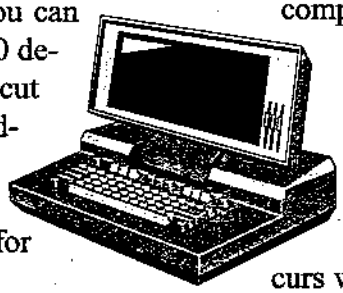
Good news: You can actually switch the mouse buttons so that the right mouse button becomes the primary key! You'll find this option under the Control Panel, in the Main program group.

Of course, if you share a machine, this will wreak havoc with your right-handed coworkers—so let 'em know first.

Eyes on Computers

Virtually all vision and eye problems caused by prolonged computer use can be corrected and avoided, reports *The New York Times*. Measures that will help in-

clude positioning the computer screen to be at right angles to the windows in the room and so you can look down at the screen at an angle of 10 to 20 degrees; in addition, using screens or hoods to cut glare; have corrected lenses that you wear adjusted for a distance of 20 to 24 inches; and taking rest breaks every 15 minutes or so by looking up and focusing on a distant object for about 2 minutes.



What's the Difference?

What's the difference between the Web and online services like America Online or Prodigy? The difference is more than a name.

The World Wide Web (the www in online addresses) is a huge network of millions of computers. Controlled and "run" by no one, the Web includes universities, government institutions, businesses, and individuals; basically anyone who wants to be part of the Web can be. Similarly, all the information on the Web is only what other people voluntarily input. Access to most of this information is free. To get onto the Web, all one needs is an Internet service provider, or ISP, which makes the connection for you through a local phone call.

However, because the Web contains so much information, online services such as America Online and Prodigy have sprung up to act as go-betweens to make Net surfing easier. These fee-charging services also provide such extras as E-mail, chat rooms, encyclopedias, publications, and more.

Color Printer Warning

One factor to consider when weighing ink-jet printers against laser printers is the number of users sharing it. Nearly all color laser printers can be connected to a LAN, while relatively few ink-jet printers come with network interfaces. The ink-jet costs less, but the savings have their own price.

Laptop Security

Laptop theft is rampant. Here's a way to increase your vigilance at airports and other public places: Secure Alert, an antitheft motion detector for notebook computers($24.95).

Secure Alert is about the size and shape of a luggage tag and can be attached to briefcases, laptops, and anything else you might have to set down while transacting business. If motion occurs while you are busy, a 120-decibel alarm goes off. Arming and deactivating is done through a push button. For more information find Da Vinci Trading at http://www.davincitrading.com or 508-435-6262.

Money-Saving Ways to Do Business

Using E-mail can dramatically cut postage, fax, and telephone costs, especially for companies that do international business. Contrast the cost of E-mail against that of international calls and faxes and overseas postage; with the mail there's the time savings as well.

Now You See It...

If you've ever mistakenly deleted a file from a disk (and had no other backup), you probably had the frantic task of trying to reconstruct your data. There's a better way—utilities that can undelete your deleted file.

Is it magic? No. Simply put, when you type a command to delete individual files, you're really just deleting the label that tells the computer where on the disk to find the file. Without the label, the computer "knows" it can eventually write over that space if it later needs the room. Special utilities programs (including the venerable Norton) will let you find the file, relabel it, and save it. And this time—back it up!

For More Information

For back issues of our newsletter and inserts, or to get on our mailing list, write: Alaska Transportation Technology Transfer Program Department of Transportation and Public Facilities, 2301 Peger Road, M/S 2550, Fairbanks, Alaska 99709-5399. For more information, you can also call (907) 451-5320, or visit our Website at:www.dot.state.ak.us/external/state_wide/t2/t2_index.htm

DATE	EVENT	SPONSOR/CONTACT	LOCATION
September 11-12	Part I Public Administration	Ontario Good Roads Association @ (905)795-2555	Mississauga, Ontario
September 13-17	1997 International Public Works Congress & Exposition	American Public Works Association @ 800-288-8606	Minneapolis, Minnesota
September 15-19	Noise Assessment in Land Use Planning	Ontario Ministry of Environment& Energy Brock Paterson @(905) 456-0266 ext.308	Etobicoke, Ontario MOEE Laboratory Auditorium
October 18-22	Water Environment Federation 70th Annual Conference & Exposition	WEFTEC @ 1-800-666-0206	Chicago, Illinois
October 20-24	National Highway Institute 15212, Soils & Foundation Overlays	ADOT&PF, Jim Bennett@ (907) 451-5322	Anchorage, Alaska Westcoast International Inn
October 29-31	Fifth Annual United States Hot Mix Asphalt Conference and Superpave Workshop	Margaret B. Cervarich @ (301) 731-4748	Pheonix, Arizona Crowne Plaza Hotel
March 2-4, 1998	Alaska Transportation Week: Conference on NQI & University of Alaska Fairbanks Transportation Forum	Alasks T2 Center/ DOT&PF/FHWA/AGC/UAF Sharon McLeod-Everette, DOT&PF @ (907) 451-5323	Anchorage, Alaska Sheraton Hotel
March 23-25, 1998	Governor's Safety & Health Conference	Alaska Safety Advisory Council	Anchorage, Alaska Egan Convention Center
April 1998	FHWA Demonstration Project No. 82- Mechanically Stabilized Earth Walls & Reinforced Soil Slopes	DOT&PF Sharon McLeod-Everette @ (907) 451-5323	Anchorage, Alaska Juneau, Alaska
May 23-27, 1999	Seventh International Conference on Low-Volume Roads	Transportation Research Board	Baton Rouge, Louisiana Louisiana State University

Meetings Around Alaska

Society	Chapter	Meetings Days	Location
ASCE	Anchorage Fairbanks Juneau	Monthly, 3rd Tues., noon Monthly, 3rd Wed., noon Monthly, 1st Wed., noon*	Northern Lights Inn Captain Bartlett Inn Breakwater Inn * except June-August
ASPE	Anchorage Fairbanks	Monthly, 2nd Thurs., noon Monthly, 1st Fri., noon	West Coast International Inn Captain Bartlett Inn
ASPLS	Anchorage Fairbanks Mat-Su Valley	Monthly, 3rd. Tues., noon Monthly, 4th Tues., noon Monthly, last Wed., noon	Executive Cafeteria, Federal Building Ethel's Sunset Inn Windbreak Cafe; George Strother, 745-9810
ITE	Anchorage	Monthly, 4th Thurs., noon	Sourdough Mining Company
IRWA	Sourdough Ch. 49 Arctic Trails Ch. 71 Totem Ch. 59	Monthly, 3rd Thurs., noon** Monthly, 2nd Thurs., noon# Monthly, 1st Wed., noon	West Coast Internat'l Inn **except July & Dec. Last Frontier Club #except July and December Mike's Place, Douglas
ICBO	Northern Chapter	Monthly, 1st Wed., noon	Zach's, Sophie Station
AWRA	Northern Region	Monthly, 3rd Wed., noon Brown Bag Lunch	Room 531 Duckering Bldg., University of Alaska Fairbanks, Larry Hinzman, 474-7331

Downing Takes Seat as New Chair

by Chris Janssen

Mike Downing joins the T2 Advisory Board as the new Chair. He comes with a variety of experiences in everything from carpentry to engineering, from the waterways of Alaska to the sun of Hawaii.

At the age of 8, Mike moved with his family to Alaska, in 1965. He grew up in Anchorage and graduated from Service High School in 1975. He went on to receive his Bachelor of Science in Construction Engineering from Oregon State and his Masters of Science in Civil Engineering from Stanford University. Mike is a registered Civil Engineer in both Washington and Alaska.

Mike has been a Journeyman Union Carpenter, as well as a general contractor for residential and light commercial construction for four years, in Juneau. During that time he was lead carpenter for the finish work on the Baranof Hotel. Mike changed careers after sustaining injuries from a 25-foot fall from a 2-story house. The doctor suggested returning to college as an alternative.

After college, Mike spent five years as an engineer and superintendent for Kiewit Construction. While working for Kiewit, Mike traveled throughout Alaska, Hawaii, and Washington on projects. The projects included two of the most interesting projects he has worked on: the Alyeska Hotel in Girdwood, and the Seattle Access, a double-deck bridge deck in the interchange over live traffic on I-5 in downtown Seattle.

Mike first began his association with the Department of Transportation and Public Facilities in 1993. In December of that year, he began work as a Technical Engineer for Alaska Marine Highway System (AMHS) in shore facilities. He became Project Manager for the ocean class vessel in February 1994 and Construction Manager for all vessel projects in September. Mike was appointed AMHS Engineering Section Manager in January of 1995. In early 1996, Mike was assigned to the Kennicott Ferry, a design-build project. "One of my best ideas was hiring Gerry Egan, a former submarine commander, to oversee the work," Mike said. Governor and Mrs. Knowles will be present at the launching of the Kennicott in Gulfport, Mississippi on September 12, 1997. Mike left AMHS and went to Engineering and Operations in December of 1996 as Director of the Division. Mike's work has been epitomized by his idea that one should always, "Do the right thing, work on the right thing, and work toward the right goal."

In his spare time, Mike and his wife Suzanne have found time to raise their two 17-year-old sons and a Golden Retriever named Zoey, as well as design and build their home in Juneau, as a family project. The house took three months to design and nine months to build. By taking a three-month leave of absence, Mike and his family were able to get it closed in, and finished in the following months.

Mike also enjoys woodworking and sport fishing for salmon. He is setting up a shop in his house, and has also been fishing about 15 times this summer. •

For More Information

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Framework For Success in San Diego

County Finds QC/QA Can Reduce Chip Seal Stresses

Part II of II, by Lita Davis

Visual inspection of emulsion

If the emulsion is running, streaking, ridging or breaking too fast or too slow, it may create improper bonding of the emulsion to the aggregate, and possibly of the emulsion to the roadway surface.

If the emulsion is running, it will provide a non-uniform application to the roadway.

Puddling can cause imperfections in the roadway surface, as well as cause the material to run off the pavement onto adjacent concrete improvements. Puddling can cause bleeding from excess binder. Running can cause raveling from reduced or uneven distribution of the binder.

Streaking and longitudinal ridging, whether from application or quality of materials, can cause raveling as well as bleeding.

Emulsion breaking too rapidly can cause premature hydration before the aggregate is placed and embedded into the emulsion.

Emulsion breaking too slow can cause delayed bonding to the aggregate and roadway surface and will also delay the sweeping of excess aggregate from the chip seal surface.

Emulsion test results will demonstrate the various properties being tested, such as penetration, viscosity and percent residue. Test results will not, however, indicate the application rate of the emulsion or if diluents are present. They can serve as an indicator of a performance problem that could occur in the future, such as extremely low or high viscosity, penetration, polymer content, percent residue and demulsibility.

Test results tell all

Test results confirm the binder and aggregate materials are in compliance with the contractor's specs.

The contract specs for the emulsion and aggregate materials are designed to furnish a chip seal that performs well on the roadway. The specs are developed for the geographic area in which the contract work will be performed. The specs do not serve as a formula for the emulsion.

With San Diego County's chip seal contract, the contractor is responsible for selecting materials and suppliers and also for developing a formula used to manufacture the emulsion.

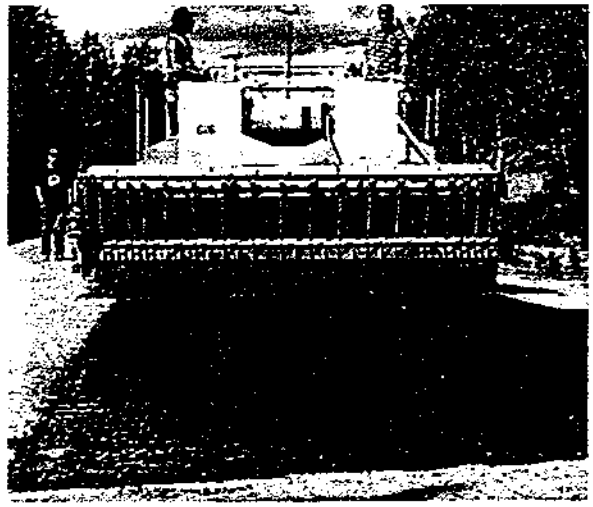
The samples submitted for pre-qualification testing assure the agency that the proposed material meets the minimum requirements of some but not all the properties of the material under the contract specs.

Once the materials meet pre-qualification testing, the construction project is allowed to begin and the samples of aggregate and emulsion materials are taken from the project site daily. Even though emulsion materials are delivered with a certificate of compliance, samples are taken and tested to determine if the materials are in compliance with the contract specs. When the materials are not in compliance, test results often serve as an indicator that a performance problem may occur in the future.

QC on the job site

Even though the materials are the most important factor in obtaining a successful chip seal, they are not the only factor. Quality control is also essential during other phases of construction.

In the transportation phase of chip seal construction, prior to loading aggregate onto delivery trucks, the truck beds should be clean of any foreign material such as asphalt concrete, soil or large rock. Not only can foreign materials contaminate the aggregate, they can also affect the me-



High float project in University Heights Service Area, Fairbanks, AK

chanics of the chip spreader at the time of unloading.

Another phase of chip seal construction is emulsion transportation. Hoses used to pump the emulsion from the producer's tanks into distributor/booster trucks should be free of any material that may contaminate the emulsion. It is not recommended that cleansing agents be left in the lines at the time of pumping or in the distributor/booster trucks at the time of loading. A small amount of foreign material mixed in with the emulsion can negatively affect the entire truckload.

Roadway preparation is another important phase. Before applying the chip seal, the roadway surface should be swept clean. Dirt and dust on the roadway surface prevent proper adhesion of the emulsion.

The application of a chip seal obliterates all traffic striping and pavement markings on the roadway. Prior to applying the chip seal, the pavement markers should be removed from the roadway and temporary reflective pavement markers should be placed in order to provide the driving public with lane delineation and locations of legends for future replacement.

The last phase of chip seal construction is traffic control. Adequate traffic control should be planned in order to provide a safe construction zone for the public and construction crew. Traffic control is necessary not only to maintain traffic speeds, but also to prevent damage to the chip seal surface and to keep windshield claims to a minimum.

Some of the tools needed in traffic control are pilot cars to convey traffic through the construction zone, traffic cones to separate construction operations and public traffic, radio communication between the traffic control operation and construction operation, arrow boards, stop/slow paddles, orange vests and hard hats, traffic controllers at major intersections and traffic signals placed on flashing red.

Two other ways to assist traffic control: Have "Sign Alerts" on the roadway to alert motorists of an operation. Have local radio stations tell their listeners a delay in their commute will be experienced if they pass through the construction.

Quality of equipment is critical

All equipment should be maintained and functioning properly to prevent problems on the job site. Emulsion distributor trucks should be calibrated before the job starts as well as during construction operations to insure proper application of the emulsion. Spray bar nozzles should be maintained to prevent plugging and should be adjusted to the proper angle. Pumps must be in excellent working order with accurate read-out gauges. Proper circulation of the emulsion is also essential. Over-circulation can cause shearing.

Hydraulic lines, belts, gates, roller and tailgate mounts require frequent maintenance on a chip spreader. In order to prevent waste of aggregate where the transfer truck hooks to the chip spreader, the rear rubber should also be maintained and adjusted as needed. A well-maintained chip spreader is essential to provide uniform application of the aggregate.

On finishing rollers, pneumatic rubber tire rollers are used for single application treatments. Rollers should be weighed before the start of the job to insure the minimum weight is obtained for proper embedment. Equipment maintenance, including proper tire pressure, is also necessary.

Successful competition keeps everyone smiling

The implementation of a QC/QA program enhances the successful completion of the chip seal project and increases the value of the finished product.

This is not to say that a QC/QA program will guarantee a successful chip seal product, but it does provide a prototype for constructing and completing a chip seal project within the specified limits and increases the opportunity for future success. Without a QC/QA program the chip seal operation can become a combination of science and black magic.

When all parties involved in a project acknowledge the benefits of a successful chip seal and support the QC/QA program, the black magic is eliminated and science and experience take over. The benefits derived by the implementation of QC/QA are directly proportional to the efforts all parties apply.

It is the public agency's responsibility to maintain its roadways with the most cost effective method and the least amount of repair work. With all parties initiating their own QA/QC program, the future of the chip seal industry will remain strong and continue to grow.

Reprinted with permission from ***The Asphalt Contractor****, February 1997. Part one of two appeared in the Spring 1997 issue.* •

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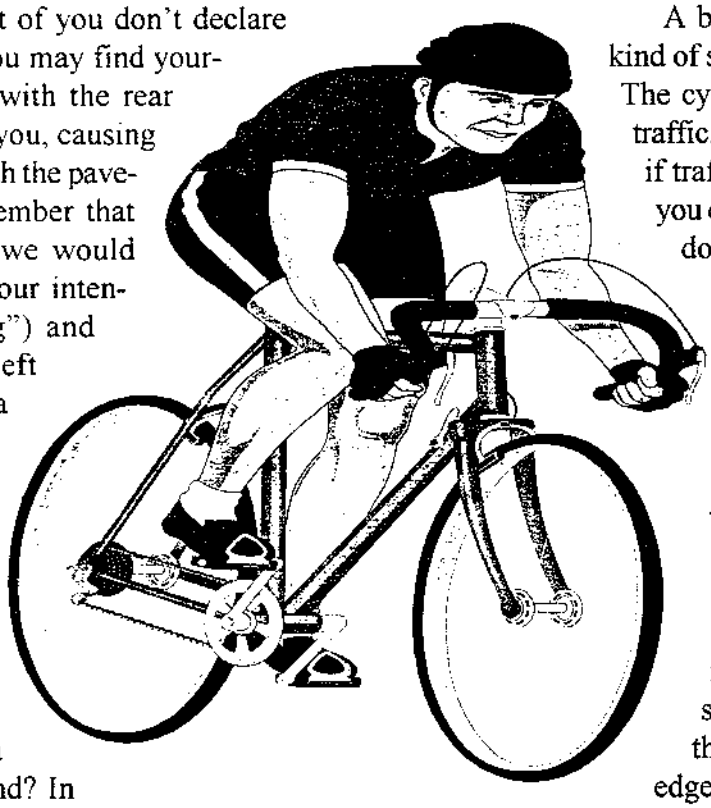
Effective Cycling

An educational program of the League of American Bicyclists has many different types of bicyclists in mind as they conduct seminars across the country. The League's bimonthly magazine, "Bicycle USA," contains tips from the League's certified training instructors. The tips are shared in a feature called the Effective Cycling (EC) Notebook.

"Slowing" and "Stopping" are two simple words that, when not used, can turn an enjoyable group ride into a calamity. If the cyclists in front of you don't declare their intention to slow down, you may find yourself having a close encounter with the rear wheel of the bicycle in front of you, causing you to have a close encounter with the pavement. If all cyclists could remember that they don't have brake lights, we would probably do better calling out our intentions ("slowing" or "stopping") and making the universal signal (left arm extended out and down at a 45 degree angle with the palm of the hand facing rearward). **Safe, street-smart cyclists are predictable and follow the rules of the road.**



Speaking of rules of the road, imagine that you are riding your bike and are approaching a stop sign. How will you respond? In general, we bicyclists get most of our bad press from the behavior we exhibit at stop signs. How often have you seen a cyclist ride at full speed through a stop sign? Have you ever rolled through a stop sign? Just what is a "stop" sign anyway?

Effective Cycling® points out the Uniform Vehicle Stop-Sign law requires two distinct actions: first, a stop, then, a yield. If a stop is defined as no longer rolling, then the bicyclist has to put his or her foot down and the motorist has to come to a complete stop. That being the case, then cyclists "stop" about as well as motorists do. A motorist usually will slow for the stop sign, then creep into the intersection and check for oncoming traffic. If there is no traffic, the motorist accelerates. If there is traffic, then the motorist stops. Is the process different for bicyclists? No.

A bicyclist can perform this kind of stop as well as a motorist. The cyclist can slow, check for traffic, yield if necessary, or stop if traffic requires. As a cyclist, you don't have to put your foot down to yield the right of way. However, *you must be in control of your vehicle* and able to stop if necessary.

With your feet still on the pedals, you are best able to get moving again after the stop sign. It is to your advantage to keep rolling as slowly as possible and pause between the visibility point and the edge of the traffic line. That pause gives you the time to see and choose a gap in traffic that will let you cross the intersection, merge into the flow of traffic, or come to a complete, foot-down stop. You'll need to know the idiosyncrasies of your local law-enforcement agencies.

Follow the rules of the road. Stop for stop signs. Be predictable. There is nothing more delightful than to

watch the look of astonishment on the face of a motorist when a bicyclist correctly yields to them. Let's be our own best advertising for our right to share the road.

Alaska has two individuals with Effective Cycling Instructor Certification; Judy Murphy is in Juneau, and Byron McCord is in Soldotna. More information on EC courses and instructor certification is available from the League's Website at: www.bikeleague.org/home.htm. To join the League of American Bicyclists call (820) 288-BIKE.

Adapted with permission from Bicycle USA, Nov. Dec. 1995. •

Rules of the Road

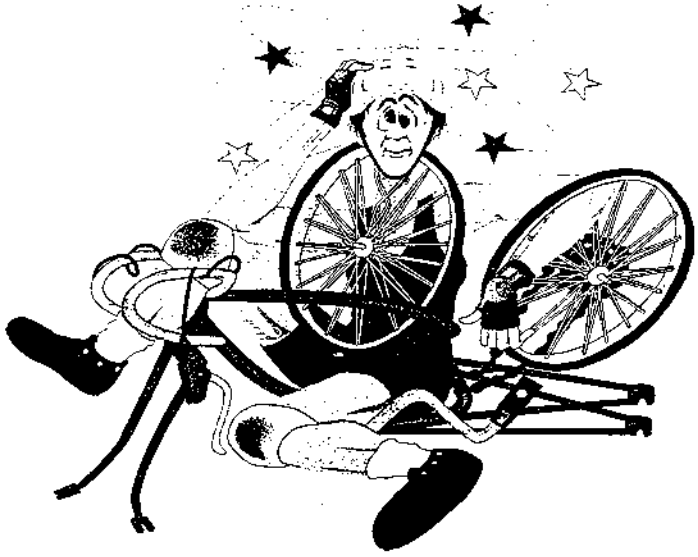
• **Obey all traffic laws.** You are the driver of a vehicle. Accept the responsibilities that go along with your rights.
• **Ride on the right.** Never ride facing traffic. When using bike paths, keep to the right side of the bike path.
• **Use hand signals.** When making turns or stops, let everyone know what you intend to do by using the correct hand signals.
• **Be courteous.** Yield to pedestrians. Give a warning when approaching a pedestrian or a slower-moving cyclist such as "Passing on you right/left".
• **Watch cars carefully at intersections.** Most bike-car collisions occur at intersections. Make eye contact with motorists.
• **Be visible.** Be a well-dressed cyclist. Wear light or bright colors, and don't forget your bicycle helmet!
• **Get a bicycle license.** Register your bike with your local police department. If your bike is ever stolen and turned in, you will be notified.

From the Alaska Department of Transportation and Public Facilities. •

Bicycling Safety Rules

1. Know and obey traffic regulations, signs, signals, and markings.
2. Cycle with traffic, not against it. Ride single file. Use bike lanes when available.
3. Use hand signals when you turn.
4. Don't carry passengers or items that interfere with your control.
5. Make sure your bicycle is well maintained.
6. Wear an approved helmet.
7. Wear bright or fluorescent clothing during the day and retro-reflective (clothing that reflects light) at night.
8. Never hitch your bicycle to a motor vehicle.
9. Look out for hazardous surfaces.
10. Cycle defensively: look out for the other guy.
11. Ride a bicycle that fits you.
12. Register your bicycle with your local police department.
13. Always lock your bicycle when it's going to be out of sight.
14. Beware of car doors opening in your path.
15. Equip your bicycle with lights and reflectors.

Reprinted with permission from the National Safety Council. •



Don't play leapfrog with a rhinoceros.

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DOT&PF Research Projects for 1997

by Matt Reckard, Research Manager, Engineering & Operations, T2 Advisory Board Member

The Alaska Department of Transportation & Public Facilities (DOT&PF) is starting several new research projects in Fiscal Year 1997. They are mostly based on the top-ranked "Research Needs Statements" received last fall from within and outside the Department. The Research Advisory Board, at their December 1996 meeting, made rankings. The new projects include the following:

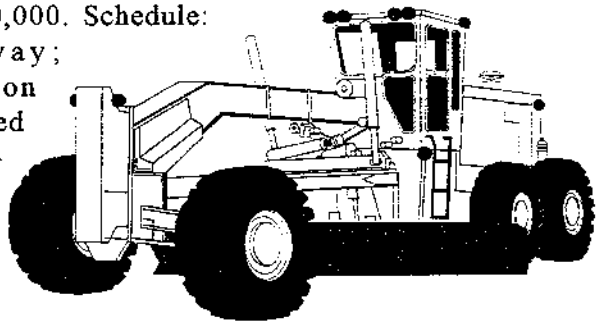
Constructability of Polymer Modified Asphalt Pavements

Various polymers (such as rubber) can be added to asphalt to make pavements that resist thermal cracking in cold weather and shoving/rutting in hot weather. DOT&PF has had some difficulties building pavements with modified asphalt, however. The problems include asphalt instability, high mixing temperature requirements, and difficulty in handling, raking, and compacting the paving mix.

This project, based on the highest-ranked "Research Needs Statement," will test the asphalt cements used in Alaska for compatibility with the available polymers, acceptable mix handling characteristics, and low-temperature benefits.

Work will be a joint effort between University of Alaska Anchorage, University of Alaska Fairbanks, and DOT&PF. Expected results include recommendations for polymer-modified asphalt contract specifications, for mixing and compacting temperatures, and for compatibility of various asphalt/polymer blends.

Project Manager: John Ryer, Northern Region Quality Assurance Engineer, (907) 451-5441. Project budget: $150,000. Schedule: Underway; completion anticipated for September 1998.



Bridge Column/Cap Connection Seismic Response

Concrete-filled steel pipe columns support most multi-span bridges designed by the DOT&PF and its consultants. The toughness of this type of column makes it a good choice in highly seismic (earthquake prone) areas. Current design methods, however, use untested assumptions about the interaction between the concrete fill and the steel pipe and about the appropriate column to cap connection. Therefore, the American Association of State Highway and Transportation Officials (AASHTO) recommendation that the column should fail before the cap (which makes it less likely that bridge spans will collapse during earthquakes) cannot be predicted with certainty.

This project will subject full sized columns and caps to simulated earthquake forces. The results will be measured and analyzed. Expected results include a report with recommended design procedures and construction details. This will help assure that columns are designed to fail before caps, thus improving bridge safety. The cost savings associated with continued use of this column/cap design amounts to thousands of dollars per column.

It is anticipated that the work will be contracted with University of California, San Diego, which has both the facilities and experience to perform large scale testing.

Project Manager: Rich Pratt, DOT&PF Bridge Design Section, Juneau, (907) 465-6942. Project budget: $135,000. Schedule: Completion anticipated for fall 1998.

Stabilized Base under Asphalt Surface Treatment

Asphalt surface treatments ("chip seals" and "high floats") are cheaper than hot asphalt pavements. They aren't very strong or durable, but they make sense on roads with low traffic volumes or where foundations are so unstable that no surface will last long. Surface treatments might hold up longer if the gravel bases under them were improved and strengthened. This project will examine the possibility of doing this using stabilizing materials.

The stabilizer EMC^2 was used experimentally on gravel

under a chip seal in 1996. The "Experimental Feature" test section, on the Alaska Highway near the Canadian border, has ice-rich permafrost foundation soils and poor fill material. The stabilizer was expected to facilitate compaction of the base (maximizing density), serve as a cementing agent (increasing strength and moisture susceptibility), and reduce susceptibility to freeze-thaw weakening. Maintenance requirements and costs should therefore be reduced. The Experimental Feature work plan estimates a benefit cost ratio of almost 2.9 to 1.

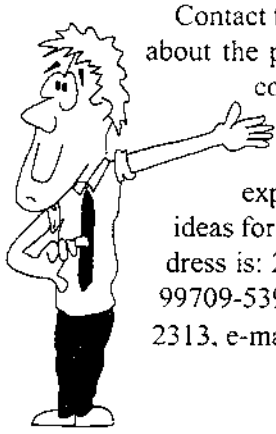
Evaluation of additional stabilized sections may be added to the project. Other candidate sections include a high float over a "Permazyme" stabilized base on the Elliott Highway and several road sections built by the City Borough of Juneau using emulsion and cement stabilization under both chip seal and high float surfaces.

Project Manager: Bob McHattie, Northern Region Geotechnical Engineer, (907) 451-2236. Project budget: $100,000. Schedule: Continuing through fall 2000.

Other New Research Projects

There are several other new research efforts for 1997. One is investigating the effect of truck tire pressure on pavement life. Another is helping the University of Alaska buy and install a Superpave Level 2 asphalt mix design laboratory, which will be available for DOT&PF training and use. Still another effort will be to assist Federal Highway Administration (FHWA) consultants in monitoring and evaluation of Alaska's six "LTPP" (Long-Term Pavement Performance) test sites. These are part of a nationwide, 20-year study with hundreds of test sites.

For Further Information



Contact the Project Managers for information about the projects described in this article. Or contact Matt Reckard, DOT&PF Research Manager, about these or other research projects. Reckard can also explain how to submit your own research ideas for consideration by DOT&PF. His address is: 2301 Peger Road, Fairbanks, Alaska 99709-5399. Phone (907) 451-5462, FAX 451-2313, e-mail Matt_Reckard@dot.state.ak.us.•

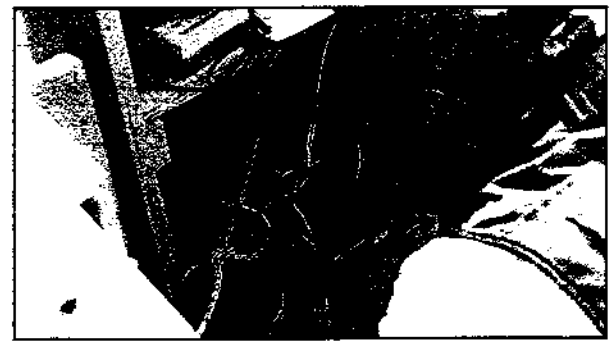
Thermocouple under membrane and wire going to data logger.

Bridge Deck Membranes

The interchange of the Parks Highway and Geist Road in Fairbanks is nearing completion, including a new bridge spanning Chena Pump Road. The bridge deck is being coated with Royston 10AN Easypave membrane to seal out water and salt and protect the concrete bridge deck and rebar from corrosion, extending the life of the bridge. The membrane was tested on the Wasilla Creek Bridge on the Parks Highway, 2.6 miles from the Glenn Highway. The membrane is also being installed on Canyon Creek Bridge on the Seward Highway in Central Region. These applications will complete the development of a database on warmer installations of the membrane.

To collect data, thermocouples were sandwiched between the layers of material. They were placed on the bridge deck and on the membrane below the asphalt overlay. The temperatures taken by the thermocouples at each layer are read with a data logger. Surface temperatures are monitored with an infrared thermometer. The information will be a part of the research conducted on the Wasilla Creek and Canyon Creek bridges to discover why there was a problem with bonding between the asphalt concrete overlay and the membrane. In the future, only membranes placed in the fall, when temperatures are cooler, will be monitored.

Research headed by: Eric Johnson, State Engineer of Tests, (907) 269-6242. •



Chris Tilly, Northern Region Computer Support, connects thermocouple to data logger.

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Northern Region

University Heights Service Area High Float Project

Overseer:Trent Mackey, Service Area Engineer, (907) 459-1218.

The Fairbanks North Star Borough is completing its first high float project in the city of Fairbanks, on three streets in the University Heights Service area and several approaches and driveways by H&H Contractors, Inc. As a local company, H&H is able to complete the

Highfloating an approach to Eton Boulevard in the University Heights Service area.

project at the lowest bid.

The cost difference between high float and chip sealing influenced the decision to go with high float, as did the success the Yukon Territory has had using it. Time was also a factor. The main thoroughfares would have been able to be completed in two days with clear weather and the approaches in an additional two days. The streets, Eton, Holy Cross, and Ithaca, are all residential with relatively little traffic. Officials hope that the high float will prove to be successful in this application for Fairbanks.

Despite a few problems with the weather, machinery, and dust, the project reached completion in one week.

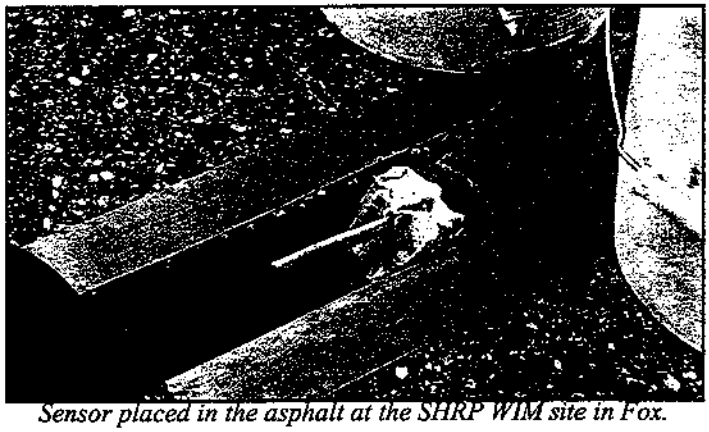
DOT&PF SHRP Project Weigh In Motion

Overseers: Doug Terhune, Highway Data Supervisor, (907) 266-0885, and Howard Helkenn, Highway Data Equipment Specialist, (907) 762-4254.

At nine sites throughout the state, the Federal Highway Administration (FHWA) requests that the state record information as a form of classifying vehicles crossing certain stretches of road. The Strategic Highway Research Program (SHRP) Weigh In Motion (WIM) project in Fox is one of these sites.

Due to failing asphalt, the equipment that was already present needed to be replaced, even though the next paving of the road section would not take place for some time. Piazza, or a bar across the road, is compressed when a vehicle passes over it. An electrical pulse is sent to sensors, which then relay the information to a computer in a box at the side of the road for data collection. Howard Helkenn said, "[the electric pulse] is a little like the electric spark for a gas grill." The sensors register the information as the pulse arrives. The electric pulses sent determine the speed, weight, and length between axles to calculate what vehicles are traveling the road. "But we're not a speed trap," Helkenn said. Instead, the data will be used to improve pavement design. The information can be accessed through a modem installed in the box, and is downloaded about once every two weeks.

Three different load vehicles were used to calibrate the sensors. They were weighed, then sent over the road 10 times to make sure the computer was recording the proper data. The error rate could not be more than 12%



Sensor placed in the asphalt at the SHRP WIM site in Fox.

on axle load, and could not be more than 10% on gross vehicle weight (GVW). The change in daily temperature requires the calibration to be manually shifted throughout the day to compensate for changes in the roadway. DOT&PF will continue to monitor the site for FHWA for the next twenty years.

Central Region

Summer Paving

The Matanuska-Susitna Borough is paving nine miles of road throughout the Borough this summer, concentrating on the core area around Wasilla and Palmer. They are using two inches of hot mix on two inches of D1 gravel. The roads chosen were already in good shape, so no grading or significant preparation was necessary. Twenty to 25 miles of gravel overlays are also being done. The borough supplies its own gravel materials and bids out the crushing and spreading.

Shirleytown Bridge

The Shirleytown Bridge over Willow Creek is being reconstructed. The 80-foot bridge was originally a wood deck constructed of untreated willow. The bridge is being redecked with treated lumber. The entire project will be completed in two weeks.

Moose Creek Bridge

A new wood decked bridge is being constructed over Trapper Creek. The Moose Creek Bridge will provide a major access point for an area with little accessibility. The Upper Susitna Soil and Conservation District is doing the project with volunteer labor. Funding is being provided by both State and Borough grants, as are some materials. The Borough has already placed the bridge abutments, but the rest of the construction is moving very slowly. A completion date has not been given.

Information provided by Jim Swing, Public Works Director, Mat-Su Borough, (907) 745-9801.

Kenai Peninsula Borough

Kenai Peninsula Road Service Area

The Kenai Peninsula Borough(KPB) Road Service Area (RSA) is in the midst of a dry but busy summer. KPB is doing its usual maintenance program and has in progress 17 Capital Improvement Projects (CIP), improvements to existing rights-of-way, which will affect 34 roads borough-wide. CIP projects can include resurfacing of an existing roadway, hydro axing for line of sight improvement and better snow removal, ditching for improved drainage, culverts and geo-textile for stability. As a part of this, the RSA is actively brushing intersections, replacing and repairing signs, and resurfacing some of its gravel roads. Road inspector Jim Conner and summer temp Cliff Massie are heading up the sign project. The sign project is to assist the KPB Emergency Medical Service (EMS) in locating places and or persons in a timely manner.

Cottonwood Bridge

The Cottonwood Bridge in the Anchor Point area is being replaced this summer by the State of Alaska Department of Transportation. Cottonwood Bridge is a single span, crossing the North Fork of the Anchor River. It is a total replacement, going from a one lane wood deck and railroad car, to a two-lane concrete girder bridge. The project is scheduled for 120 days. The project will be a safer access for the residents of the area and will continue to provide an access for area logging interests.

Information provided by Tom Ackerly, Director of Roads, Kenai Penninsula Borough, (907) 262-4427.

Southcentral District

Glenn, Richardson, and Tok Highways

A crew from the Southcentral district leveled and sealed 27 areas in a major patching effort this summer. Miles 82-100 on the Richardson Highway and Miles 134-157 on the Glenn Highway were sealed with a high tech rubberized asphalt sealant. The area with the most cracking was Mile 151- Mile 157 on the Glenn, while Mile 91 of the Richardson near Willow Lake had very deep cracks. The progress of the crew varied from one to three miles a day, depending upon the extent of cracking. The Glenn and Tok highways also had nearly 1500 cubic yards of cold mix asphalt applied.

New Structures

Maintenance and Operations constructed new 40' by 60' sand sheds at Slana Pass and Thompson Pass. (See future issues for more information on the sand shed.) Southcentral district removed all underground fueling storage tanks and replaced them with above ground tanks.

Information provided by George Levassuer, Southcentral District Manager, Maintenance & Operations, (907) 451-5160.

For More Information

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New Publications Available for Loan — *1997*

No.46

Place a check by the publications that you would like to borrow.

_____**Electrical Resistivity of Concrete,** Norwegian Road Research Laboratory, July 1995.

_____**Transit Productivity Program - Session One: Helping Yourself to Microcomputers,** APTA, October 1983.

_____**Initial Observation of Salt Sieving in Frozen Soil, Report 94-9,** US Army Corp of Engineers, CRREL, August 1994.

_____**Central Tire Inflation: Demonstration Tests in the South, SO-78,** USDA, September 1990.

_____**Development of an Interactive Interface for the Dynaflection Measurement System,** FHWA/OH-94/008, Ohio DOT, April 1994.

_____**Idaho Highway Needs Assessment Study Update,** Local Highway Needs Assessment Council, June 1995.

_____**Snow and Ice Control: A Best Practices Review - Executive Summary,** Minnesota DOT, May 1995.

_____**Snow and Ice Control: A Best Practices Review,** Minnesota DOT, May 1995.

_____**Alaska's National Highways,** Alaska DOT, September 1995.

_____**Detector Location for Computerized Arterial Street Sampling Detectors,** Research Report 1392-6, Texas Transportation Institute, February 1995.

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_____**Initial Performance of Asphalt Overlays on Overlaid Jointed Concrete Pavement (JCP) and on Flexible Pavements in Field Test Sections in Lufkin, Texas,** Research Report 987-4.

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_____**Underground Safety Series,** Underground Contractors Association, 1992 , 40:00. This video covers heavy equipment operation, trench shields, jobsite hazards, and personal safety.

_____**Use of Geotextiles to Control Longitudinal Spreading of Roadways,** ID# 421.

_____**Zimmerman's Hot Sander Test at the Anchorage Equipment Yard,** 1986, 17:00, ID# 423.

_____**Port of Nome: Preliminary Over Rate Experiments,** American Video Laboratory, 25:00. ID# 424.

_____**Port of Nome: Sheets 12-15,** American Video Laboratory, ID# 425.

_____**Port of Nome: Sheets 16-19,** American Video Laboratory, 32:00, ID# 426.

_____**Port of Nome: Sheets 21-23,** American Video Laboratory, 41:00, ID# 427.

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_____**Selecting the Perfect Team,** Video Arts Incorporated , 24:00 (Discussion Leaders Guide Included.), ID# 431.

_____**From "No" to "Yes,"** Video Arts Incorporated, 27:00, (Discussion Leaders Guide Included.), ID# 432.

_____**Building the Perfect Team,** Video Arts Limited, 29:00, (Discussion Leaders Guide Included.), ID# 433.

_____**Making Your Case,** Video Arts Limited, 25:00, (Discussion Leaders Guide Included.), ID# 434.

_____**Where There's a Will...,** Video Arts Limited, 29:00, (Discussion Leaders Guide Included.), ID# 435.

_____**Understanding Superpave Mix Design,** National Asphalt Pavement Association and The Federal Highway Administration, 13:10, ID# 436.

_____**Road Traffic in Winter Project**, Finnish National Road Administration, 12:00, ID# 437.

_____**You'll Soon Get The Hang of It**, Video Arts Limited, 28:00, (Discussion Leaders Guide Included.), ID# 438.

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Inspector's Job Guide and Highway Maintenance Tables

This laminated, 3¼" x 7" pocket guide covers very basic duties of inspection by reference to key activities. They must be supplemented by reference to contract documents, specifications, special provisions, instructional manuals, and guidance by the project engineer.
Available in both English and Metric versions, on a first-come, first-served basis.

The National Highway Institute 1997 Course Catalog

The catalog has a complete listing and description of all courses offered by the National Highway Institute (NHI). Limited supply.

The Local Technical Assistance Program

This publication describes the purpose and duties of the Local Technical Assistance Program(LTAP).

Stream Stability and Scour at Highway Bridges, Bridge Inspectors Module-Participant Notebook

This notebook is used as part of a module to identify stream instability; understand the problem caused by instability and scour;understand magnitude of scour; recognize potential counter measures; relate evaluations to the National Bridge Inspection Standards. •

_____**The Helping Hand,** Video Arts Limited, 38:00, (Discussion Leaders Guide Included.), ID# 439.

_____**Safety Six,** The six driving conditions video, workbook and training program for defensive driving for county public works, ID# 440.

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Highway Safety Design and Operations Guide 1997
This updated version of AASHTO's "Yellow Book" combines the results of research and state-of-the-art technologies with proven engineering practices for enhancing safety in the operation and management of highways. This guide identifies appropriate safety enhancements for both new highway and 3R projects, introduces and consolidates new safety information, and suggests how existing situations might be upgraded to meet current standards as well as future needs. Consequently, this guide can be used not only for design and planning purposes but also as a basis for field reviews during project planning, development, and evaluation. (132pp.) *Code SR-3*

Guide for Painting Steel Structures
The need for this document is apparent to those trying to achieve a cost-effective level of protection for both new and existing structures. The escalating impact of environmental and health-related issues on the cost of bridge painting warrants a total rethinking of current and long-time successful practices. This guide is intended to provide long-term protection and reduce corrosion control costs. 1997(100pp.) *Code GPSS*

AASHTO LRFD Bridge Design Specifications Set
Set includes 1994 First Edition, 1996 Interims, and 1997 Interims. (3-Volume Set) *Code LRFD-US/SET (Standard); Code LRFD-SI/SET (Metric)*

AASHTO LRFD Bridge Design Specifications-1996 Interim Revisions, SI and U.S. Units
This is the first set of interim revisions to this title since its release in 1994. U.S. Units (538pp.) SI Units (588pp.) *Code LRFD-US/961; Code LRFD-SI/961 (Metric); Code LRFD-EM/961 (Standard and Metric, 2-Volume Set)*

Manual for Condition Evaluation of Bridges-1995 and 1996 Interim Revisions
This 20-page packet features the latest revisions to the 1994 release *Manual for Condition Evaluation of Bridges. Code MCEB-REV*

NTPEP 117-1995 Test Deck Laboratory and 1-Year Outdoor Exposure Test Data on Sign Sheeting Material
This report presents the data accumulated during the first year of evaluations performed on five different sign sheeting materials submitted in 1995. The report presents the laboratory results along with the six-month and one-year outdoor exposure data from test decks in Louisiana, Minnesota, North Carolina and Virginia. *Code NTPEP 117*

NTEPEP 118-1994 Test Deck 2-Year Outdoor Exposure Test Data on Sign Sheeting Material
This report presents the data accumulated during the first two years of evaluations performed on eight different sign sheeting materials submitted in 1994. The report presents six-month, one-year, and two-year outdoor exposure data from test decks in Louisiana, North Carolina, and Virginia. *Code NTPEP 118*

NTPEP 119-1993 Test Deck 3-Year Outdoor Exposure Test Data on Sign Sheeting Material
This report presents the data accumulated during the first three years of evaluations performed on three different sign sheeting materials submitted in 1993. The report presents one-year, two-year, and three-year outdoor exposure data from decks in Louisiana, North Carolina, and Virginia. *Code NTPEP 119*

NTPEP 120-1994 Pavement Markers
This report contains laboratory and field exposure data on two manufacturer's long-term raised pavement markers that were evaluated in Georgia beginning in 1994. Marker condition and specific intensity were evaluated quarterly for a two-year period. The report also contains a comparison of specific intensity readings obtained from a portable retroreflectometer and a laboratory photometer. *Code NTPEP 120*

NTPEP 121-Summary of Results of 1995 Field and Laboratory Evaluations of Pavement Marking Material, Volume 1: Field Evaluations
This report contains one-year field exposure data for 173 pavement marking materials (traffic paint, thermoplastic and tape) placed on a test deck in Kentucky in 1995 and two-year field exposure data for 95 long-life materials (such as thermoplastics and nonremovable tape) placed on a test deck in Alabama in 1994. The test decks included Portland cement concrete and asphalt cement road surfaces. Results include evaluations of reflectivity, durability, appearance and color for all pavement marking materials, as well as evaluations of re-

movability and discernability (after removal) of removable tape materials. *Code NTPEP 121*

NTPEP 122-Summary of Results of 1995 Field and Laboratory Evaluations of Pavement Marking Materials, Volume II: Laboratory Evaluations (Kentucky Test Deck Materials)

This companion report to NTPEP 121 contains laboratory data for 173 pavement marking materials (traffic paint, thermoplastic and tape) placed on a Kentucky test deck in 1995. *Code NTPEP 122*

NTPEP 123-Comparison of Portable Retroreflectometers

This report presents the results of a study comparing retroreflectivity results taken with retroreflectometers having 30-meter geometry to those taken with retroreflectrometers not having 30-meter geometry. *Code NTPEP 123*

NTPEP 124-Report on Winter 1996/Summer 1996 Flexible Delineator Impact Testing

This report contains performance evaluations of nine different flexible delineator systems when impacted with a standard vehicle five times in cold weather and five times in warm weather at a speed of 55mph. *Code NTPEP 124*

NTPEP 125-Summary of Results of 1995 Field and Laboratory Evaluations of Pavement Marking Materials, Volume I: Field Evaluations

This report contains one-year field exposure data for 46 pavement marking materials (traffic paint, thermoplastic and tape) placed on a test deck in Oregon in 1995. The test decks included Portland cement concrete and asphalt cement road surfaces. Results include evaluations of reflectivity, durability, appearance and color for all pavement marking materials, as well as evaluations for removability and discernability (after removal) of removable materials. *Code NTPEP 125*

NTPEP 126-Summary of Results of 1995 Field and Laboratory Evaluations of Pavement Marking Materials, Volume II: Laboratory Evaluations

This companion report to NTPEP 125 contains laboratory data for the pavement marking materials (traffic paint, thermoplastic and tape) placed on the Oregon deck in 1995. *Code NTPEP 126*

NTPEP 127-Report of Summer 1996/Winter 1997 Flexible Delineator and Plastic Barrel Impact Testing

This report contains performance evaluations of seven different flexible delineator systems and one type of plastic barrel. Each product was impacted with a standard vehicle five times in cold weather and five times in warm weather at a speed of 55 mph. *Code NTPEP 127*

AASHTO Provisional Standards-June 1997 Interim Edition

This publication provides 21 new and updated standards. It is a companion to *AASHTO Provisional Standards-1 96 Edition* (PS-96). For the first-time buyer of provisional standards, both PS-96 and PS-97I should be purchased for up-to-date information. For the buyer who already has PS-96, only PS-97I should be purchased. (228pp.) *Code PS-97I*

Guidance on Sharing Freeway and Highway Rights-of-Way for Telecommunications

With public and private interests building new communications networks on an unprecedented scale, AASHTO has published guidance on implementing shared resource projects between the private and public sector. This guide identifies key elements that are involved in the implementation of shared resource projects, specifically focusing on telecommunication projects that require access to public rights-of-way. The publication is designed as an overview of the steps and activities that are typically involved in the process based on the experiences of public agencies that have completed or initiated shared resource projects. Prepared by Apogee Research for the AASHTO Task Force on Fiber Optics on Transportation Rights-of-Way. 1997, (56pp.) *Code GSRWT-1*

To order the publications listed, contact the American Association of State Highway and Transportation Officials (AASHTO).
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Computer-automated Cutting System Cuts Time of Signs

by Chris Janssen

In the past, Fairbanks citizens had to wait up to two months to have a sign put up in their neighborhoods. This is no longer the case. Now, thanks to a computer-automated system by Advanced Digital Cutting acquired two years ago, the City of Fairbanks Public Works can have a new sign requested, made, and in place by mid-morning.

The manufacturer of Advanced Digital Cutting provided all the training necessary to operate the system. A company representative, as well as one from the materials manufacturer, delivered the equipment, set it up, and trained the two city operators for three, eight-hour sessions. The company backed the product with an 800 help-line.

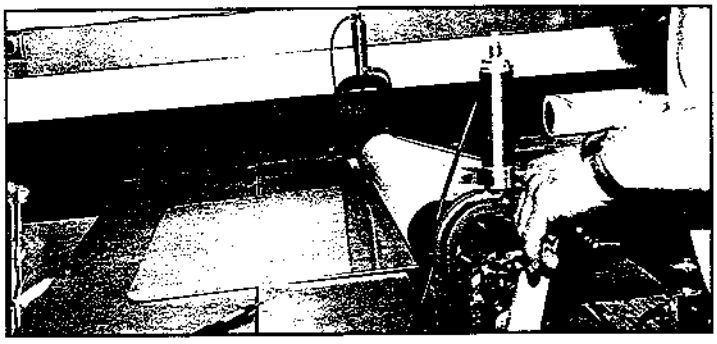
Ralph Mongold, Traffic Sign Specialist/Operator for Fairbanks Public Works, enters the design number for the requested sign in AutoCAD . The cutter cuts the material for the face of the sign. Ralph then trims the excess material. Then he applies prespacing tape over the design to keep it lined up properly. He rolls high-intensity material, then the face, onto the aluminum blank with the dual 48-inch air-operated applicator roller.

Ralph is able to design specialty signs as well. He has created signs for the University of Alaska Fairbanks, Fish and Game, and T2. "I can't think of a sign we can't make with this thing," Ralph said. The sign shop offers assistance to any government agency in need of a sign. The sign shop was able to assist the Fairbanks Police Department when it needed a road closed sign after an accident blocked the Richardson Highway. Ralph was able to make a sign and get it to the site in a matter minutes. Dave Jacoby, Director of Public Works, said, "At a moment's notice, if we need a sign, we get it."

The City has decided to integrate the system into its plan for making the city more user-friendly. Improved signage has made it easier for visitors and emergency vehicles to find a location. The citizens of Fairbanks have already started to respond to the quick reaction time for sign placement by requesting signs to be replaced, or placed for the first time, in their neighborhoods.

Producing its own signs provides a lot of advantages for the City of Fairbanks. Signs can be replaced in one day, rather than waiting the 30-60 days it used to take a shipment to arrive. Making the signs eliminates the higher cost of producing the signs in the lower 48, and the enormous freight costs involved. The system can automatically size the lettering to fit the sign, unlike the previous method. The materials used for the signs are high-intensity, which means the signs reflect better at night and during Fairbanks' long winter than the signs with reflective paint. This process also allows all aluminum blanks to be reused for another sign. The old, faded image is removed, and the new image is rolled on. The system is already metric programmed, so Public Works will have a smooth transition to the metric system.

The system has been in place two years. Jacoby estimates it will only take one more year for the system to have completely paid for itself. By next year, all needed signs should be in place, faded signs should be replaced, and a maintenance schedule should be instituted.•



Left: Ralph cuts away the excess material.
Top Right: Ralph uses the air-operated applicator roller to apply material to a blank.
Bottom Right: Ralph peels back the prespacing tape to reveal the finished product.

continued from page 1

awards accomplish all other maintenance work.

When the road service areas were first formed, many of the contracts were awarded for very small areas, some as small as 10 miles of road, so a number of small firms maintained the roads. The contracts were all equipment rental type contracts. The Borough called the contractors out to work when employees foresaw the need for maintenance work, and paid the contractor for the number of hours each piece of equipment worked.

In 1990, the Borough issued a performance type contract for road maintenance in one of the road service areas. This performance contract requires the contractor to grade gravel roads and remove snow at their discretion, as long as they conform to the parameters of the contract. These parameters require the contractor to plow when certain depths are accumulated and to remove all snow by a certain time after the snow fall stops. The grading of roads is controlled by the number of potholes per area of road. Each month, a percentage of the total contract is paid in a lump sum from an estimate of the work for that month. A supplemental equipment rental portion of the contract is also available to be used for work beyond the contract. Budgeting is made much easier since each year the cost of maintenance is known. In 1996, the last of the equipment rental contracts expired and were replaced by performance contracts.

Since beginning this program, additional items have been added to the contracts. Contractors are now responsible for sanding roads. The Borough furnishes the sand and chips, but the decision to sand has been transferred to the contractor. Contractors are also required to cut brush from alongside one-third of the roads covered by the contract each year; thus, every three years all the roads are brushed.

In the early 1990's, several heavy snowfall years put some of the service areas in debt. Since the initiation of the performance or lump sum contracts, all service areas are now debt-free. The contractors are required to plow snow for a set amount of money, regardless of the severity of the winter. Although this may appear unfair to the contractor, it has been found that over the five-year life of the contracts, winters average out to be fairly normal.

The Borough and the contractors have been pleased with the results of the performance contracts, as has the public. Residents receive better road maintenance and contractors have a constant amount of money each year. The Borough expects to continue using these types of contracts in the future. •

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